

Patent No. 4,538,996 to Inwood, for the following reasons.

Independent claims 29 and 43 each recite structure (to wit, the thrust bracket having side walls) previously recited in allowable claim 11. Therefore, it is believed that claims 29 and 43, as well as claims 30-33 and 44 dependent thereon, are patentable for reasons already acknowledged by the examiner. More specifically, neither Ishigaki nor Inwood discloses a thrust bracket. Inwood discloses an outboard propulsion system that is pivotable about a vertical axis, which Applicant's system is not. Ishigaki does not disclose an outboard propulsion system that is pivotable about a horizontal axis, whereas Applicant's system is pivotable about a horizontal axis. Thus, neither Inwood nor Ishigaki has any need for a thrust bracket of the type recited in claims 29 and 43. Accordingly, Applicant submits that claims 29 and 43, as well as claims 30-33 and 44 dependent thereon are allowable.

Independent claims 34 and 45 recite structure not shown or suggested in either Ishigaki or Inwood. In particular, Inwood does not disclose an exhaust housing and an inlet housing having confronting and contacting faces. Although Inwood discloses contacting faces 43 and 48 in Figure 3, item 48 is the bottom wall of the belly pan that encloses the engine, that bottom wall being mounted on the exhaust housing 43. The exhaust housing 43 of Inwood does not have a wall or face that sits on the impeller housing 44. Furthermore, the impeller housing 44 is not an inlet housing as structurally defined in Applicant's

claims 34 and 45. Therefore, the Applicant submits that claims 34 and 45, as well as claims 35-42 and 46-48 dependent thereon are allowable.

In view of the foregoing, the Applicant submits that all pending claims are in condition for allowance. Reconsideration of the application and allowance of claims 29-48 are hereby requested.

This application now has a total of 20 claims, with 4 independent claims. The highest number of independent claims previously paid for was 5. Therefore, no fee for extra claims is required.

**SUBMISSION OF CLEAN CLAIMS  
AND AMENDED SPECIFICATION  
PURSUANT TO 37 CFR § 1.121**

In compliance with 37 CFR § 1.121, the Applicant hereby submits "clean" copies of the amended paragraphs from the specification and the claims now pending in this application as follows:

AMENDED PARAGRAPHS:

Substitute the following for the paragraph starting on page 1, line 7:

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Jet-powered boats can be categorized in part in accordance with the types of propulsion systems used. The powerhead can be mounted either inside the hull or outside the hull. In the latter case, the powerhead is mounted on the transom portion of the boat hull and is detachable. Another type of system, called a stern drive system, and sometimes referred to as an inboard-outboard system, utilizes a powerhead mounted inside the hull of the boat with a portion of the drive unit extending through the transom. These systems create thrust through rotation of a ducted impeller, which draws water from ahead and impels the water rearward to propel the boat forward.

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Substitute the following for the paragraph starting on page 1, line 19:

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3  
To facilitate use of water jet-propelled boats in shallow water, it is known to mount the ducted impeller at an elevation such that the propulsion system does not project below the bottom of the boat hull. This can be accomplished, for example, by installing a duct in the stern of the boat, the duct being arranged to connect one or more inlet holes formed in the

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bottom of the hull with an outlet hole formed in the transom. The water jet is then installed outside the hull in a position such that the water jet inlet is in fluid communication with the duct outlet at the transom. Alternatively, a water tunnel is formed in the bottom of the hull which is open at the bottom and at the transom. A water jet propulsion system is then mounted to the transom by means of a mounting adapter, the inlet of the propulsion system being in fluid communication with the water tunnel via the adapter.

Substitute the following for the paragraph starting on page 5, line 8:

4  
A steering nozzle 22 is pivotably mounted to the exit nozzle by means of a pair of pivot pins 24 (only one of which is visible in FIG. 1) which are coaxial with a vertical axis. This allows the steering nozzle to be pivoted from side to side for directing thrust to one side or the other for the purpose of steering the boat. The water exiting the steering nozzle creates a reaction force which propels the boat forward. The angular position of steering nozzle 22 is controlled by a steering rod 23, which is pivotably coupled to a clevis at the end of a lateral steering arm 25. The water flow exiting the steering nozzle 22 can be reversed by activation of a conventional reverse gate 28, which is actuated by a shift rod not shown. The reverse gate 28 blocks the rearward discharge of water from the steering nozzle outlet and redirects it through a slot and out a flow-reversing passage 26 with a forward (instead of rearward) velocity component. The steering nozzle 22, steering arm 25 and flow-reversing passage 26 are preferably formed as one cast metal piece. The levers, rods and cables for actuating the shift and steering rods from a remote location, e.g., the cockpit of the boat, although not shown in FIG. 1, are conventional structures which penetrate the hull transom in well-known manner.

PENDING CLAIMS:

29. A jet-powered boat comprising a hull having a stern and a bottom, an outboard water jet propulsion system mounted to said hull, and a thrust bracket arranged between said water jet propulsion system and said stern of said hull and comprising side walls, wherein said outboard water jet propulsion system comprises:

an engine;

an exhaust housing pivotably mounted to said hull and supporting said engine, said exhaust housing having an exhaust gas passage and being flanked on opposite sides thereof by said side walls of said thrust bracket;

an axial-flow pump unit attached to said exhaust housing, said axial-flow pump unit comprising a water duct, an impeller mounted to a generally horizontal impeller shaft and rotatable inside said water duct, and an exhaust gas passage in fluid communication with said exhaust gas passage of said exhaust housing; and

a drive train for coupling said engine to said impeller shaft for driving said impeller shaft to rotate during engine operation.

30. The boat as recited in claim 29, wherein said thrust bracket further comprises a flat mounting plate that lies flat against said stern, said side thrust walls being generally perpendicular to said mounting plate.

31. The boat as recited in claim 29, wherein said drive train comprises a generally vertical drive shaft coupled to said engine and gears for converting rotation of said generally vertical drive shaft into rotation of said generally horizontal impeller shaft.

32. The boat as recited in claim 29, further comprising a tilt pivot tube, wherein said exhaust housing comprises a pair of mounting brackets adapted for coupling with said tilt pivot tube.

33. The boat as recited in claim 29, wherein said water duct has a generally horizontal inlet at a depth not lower than a lowest point of said hull bottom.

34. A jet-powered boat comprising a hull having a stern and a bottom, and an outboard water jet propulsion system mounted to said hull, wherein said outboard water jet propulsion system comprises:

an engine;

a vertical drive shaft powered by said engine;

a horizontal impeller shaft with an impeller mounted thereon;

a gear assembly for coupling said horizontal impeller shaft to said vertical drive shaft;

an inlet housing comprising a planar top face having an exhaust gas inlet and an opening penetrated by said vertical drive shaft, a chamber for housing said gear assembly, a rear face having an exhaust gas outlet, a passageway connecting said exhaust gas inlet with said exhaust gas outlet, and a water tunnel having a water inlet formed in a bottom of said inlet housing and a water outlet formed in said rear face of said inlet housing, said water tunnel and said chamber being separated by a wall that is penetrated by said horizontal impeller shaft; and

an exhaust housing pivotably mounted to said hull and supporting said engine, said exhaust housing comprising a top face and a planar bottom face, said bottom face of said exhaust

housing sitting on top of said top face of said inlet housing, a vertical passage for said vertical drive shaft, an exhaust gas passage that runs from an opening in said top face of said exhaust housing to an opening in said bottom face of said exhaust housing, said opening in said bottom face of said exhaust housing overlying said exhaust gas inlet in said inlet housing.

35. The boat as recited in claim 34, wherein said outboard water jet propulsion system further comprises an outlet housing attached to said rear face of said inlet housing, said outlet housing comprising a duct outlet in flow communication with said water tunnel and an exhaust gas passage in fluid communication with said exhaust gas passage of said inlet housing.

36. The boat as recited in claim 35, wherein said outlet housing comprises a stator hub and a plurality of stator vanes, said impeller shaft being rotatably supported by a bearing housed within said stator hub.

37. The boat as recited in claim 34, wherein said gear assembly is fastened to said inlet housing.

38. The boat as recited in claim 34, further comprising a thrust bracket arranged between said water jet propulsion system and said stern of said hull, said thrust bracket comprising a flat mounting plate that lies flat against said stern and a pair of side thrust walls that are generally perpendicular to said mounting plate.

39. The boat as recited in claim 38, wherein said exhaust housing comprises a pair of recesses on opposing sides, said side thrust walls of said thrust bracket fitting in said respective recesses in said exhaust housing.

40. The boat as recited in claim 34, further comprising a tilt pivot tube, wherein said exhaust housing comprises a pair of mounting brackets adapted for coupling with said tilt pivot tube, whereby said water jet propulsion system is pivotable relative to said hull about an axis of said tilt pivot tube.

41. The boat as recited in claim 36, wherein said outlet housing has a engine coolant opening located opposite and radially outward of said impeller, and said exhaust housing comprises a vertical water passage for providing cooling water to said engine, said vertical water passage having an inlet overlying said engine coolant opening in said outlet housing.

42. The boat as recited in claim 34, further comprising a bearing assembly rotatably supporting said vertical drive shaft, wherein said bearing assembly is seated in said opening of and fastened to said inlet housing.

43. A jet-powered boat comprising a hull having a stern and a bottom, an outboard water jet propulsion system pivotably mounted to said hull, and a thrust bracket arranged between said outboard water jet propulsion system and said stern of said hull, wherein said thrust bracket comprises a flat mounting plate that lies flat against said stern and a pair of side thrust walls extending generally parallel to each other and generally perpendicular to said mounting plate, said side thrust walls flanking respective adjoining portions of said outboard water jet propulsion system to restrain lateral displacement of said adjoining portions of said outboard water jet propulsion system due to side thrust in either direction.

44. The boat as recited in claim 43, further comprising a tilt pivot tube, wherein said water jet propulsion system comprises a pair of mounting brackets adapted for coupling with said tilt pivot tube, whereby said water jet



propulsion system is pivotable relative to said hull about an axis of said tilt pivot tube.

45. An outboard water jet propulsion system comprising:

an engine;

an impeller;

a drive train for coupling said impeller to said engine;

an inlet housing comprising a top face having an exhaust gas inlet and an opening penetrated by a first portion of said drive train, a chamber for housing a second portion of said drive train, a rear face having an exhaust gas outlet, a passageway connecting said exhaust gas inlet with said exhaust gas outlet, and a water tunnel having a water inlet formed in a bottom of said inlet housing and a water outlet formed in said rear face of said inlet housing, said water tunnel and said chamber being separated by a wall that is penetrated by a third portion of said drive train;

an outlet housing for housing said impeller and a fourth portion of said drive train, said outlet housing comprising a duct having a water inlet in flow communication with said water tunnel and a water discharge outlet; and

an exhaust housing comprising a top face supporting said engine and a bottom face that sits on top of said top face of said inlet housing, a vertical passage for a fifth portion of said drive train, and an exhaust gas passage that runs from an opening in said top face of said exhaust housing to an opening in said bottom face of said exhaust housing, said opening in said bottom face of said exhaust housing overlying said exhaust gas inlet in said inlet housing.

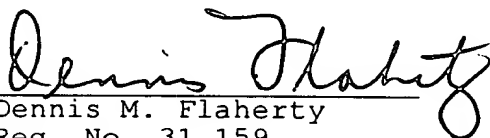
46. The system as recited in claim 45, wherein said outlet housing comprises an exhaust gas inlet in flow communication with said exhaust gas outlet of said inlet housing.

47. The system as recited in claim 45, wherein said bottom face of said exhaust housing and said top face of said inlet housing are each generally planar.

48. The system as recited in claim 45, further comprising a plurality of fasteners whereby said inlet housing is fastened to said exhaust housing.

Respectfully submitted,

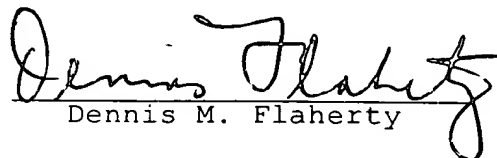
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CERTIFICATE OF MAILING

The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on the date set forth below.

June 12, 2002  
Date

  
Dennis M. Flaherty